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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/619,100	07/14/2003	Mitsuharu Ohki	09812.0386	5797
22852 7590 09/17/2007 FINNEGAN, HENDERSON, FARABOW, GARRETT & DUNNER LLP 901 NEW YORK AVENUE, NW WASHINGTON, DC 20001-4413			EXAMINER MISLEH, JUSTIN P	
			ART UNIT 2622	PAPER NUMBER
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/619,100

Applicant(s)

OHKI, MITSU HARU

Examiner

Justin P. Misleh

Art Unit

2622

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 June 2007.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 - 17 is/are pending in the application.
- 4a) Of the above claim(s) 5 - 17 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1 - 4 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 14 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Applicant's election without traverse of Species I (Figures 1 – 4A) in the reply filed on June 19, 2007 is acknowledged.
2. **Claims 5 – 17** are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected species, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on June 19, 2007.
3. In the Election of Species requirement, mailed May 30, 2007, the Examiner inadvertently appeared to have included Figure 4 with Species I. Figure 4 belongs to Species II and should have been indicated as such. Therefore, for accuracy, the Examiner will treat Figures 1A – 3 as belonging to Species I, Figures 4 – 7 as belonging to Species II, and Figures 8 – 11 as belonging to Species III. The revision does not affect the elected claims. **Applicant is respectfully requested to acknowledge the revised species.**

Specification

4. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.
5. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. **Claims 1 – 4** are rejected under 35 U.S.C. 103(a) as being unpatentable over Kindt et al. (US 7,038,820 B1) in view of Clark (US 6,529,241 B1).

8. For **Claim 1**, Kindt et al. disclose, as shown in figures 2 and 4, an imaging apparatus comprising:

a photoreceptor element (1100) that changes an electric-signal level on an output line thereof (“column readout line”) in accordance with an intensity of light received (see column 10, lines 21 – 41);

comparing means (Threshold Detector X41) for comparing the electric-signal level on the output line (“column readout line”) of the photoreceptor element (1100) with a threshold electric-signal level (V_{REF1} and V_{REF2}), and sending an output signal on condition that the electric-signal level on the output line of the photoreceptor element has crossed the threshold electric-signal level (see column 10, lines 7 – 20);

wherein the threshold electric-signal level changes (V_{REF1} and V_{REF2}) as time elapses (“The exposure threshold may be statically set by the first and second reference voltages, or dynamically set by changing the second reference voltage during the integration time interval”; see column 10, line 63 – column 11, line 5).

Kindt et al. do not specifically disclose storage means, to which a clock signal is input, for recording information regarding a time of generation of the output signal from the comparing means.

On the other hand, Clark also discloses an imaging apparatus having a photoreceptor element for outputting an electric-signal level in accordance with light and a comparing means for comparing the electric-signal level with a threshold electric signal level (see figures 1, 4, and 5). More specifically, Clark teaches an imaging apparatus with a photocell (100) and a comparing means (control circuit (CCKT)) such that an integration period, which begins with photocell reset and ends when the electric-signal level of the photocell crosses a threshold electric-signal level, is measure in units of time (see steps 414 – 428; figure 4 and as stated in column 5, line 22 – column 6, line 35). Furthermore, Clark teaches, as stated in column 6 (lines 21 – 27), “the time at which MONITOR is pulled high, and/or the integration time interval ... for the group of cells connected to MONITOR is stored by the imaging system. This interval is then used to computer the energy that was incident on the group of cells after obtaining the photocell output values at BL in step 430.” Therefore, Clark clearly teaches storage means, to which a clock signal is input, for recording information regarding a time of generation of the output signal from the comparing means, as claimed.

Hence, at the time the invention was made it would have been obvious to one with ordinary skill in the art to have included a storage means, to which a clock signal is input, for recording information regarding a time of generation of the output signal from the comparing means, as taught by Clark, into the imaging apparatus of Kindt et al. for the advantage of

providing “a better technique of preventing saturation in photocells and sensor arrays ... that helps maximize dynamic range” (see Clark, column 2, lines 19 – 27).

9. As for **Claim 2**, Kindt et al. disclose, as shown in figures 2 and 4, wherein the photoreceptor element (1100) is set to an initial-setting electric-signal level by an initialize signal (“During the reset time interval the pixel array is reset such that the pixels are initialized to an initialization voltage”; see column 9, lines 66 and 67) and the electric-signal level on the output line is lowered in accordance with the intensity of light received (“a photocurrent (I_p) will flow from the cathode to the anode of the photodiode when the photodiode receives photons (light). The photocurrent (I_p) discharges the photodiode’s depletion layer capacitance (C_d) and causes the voltage across the photodiode 208 to drop”; see column 6, lines 45 – 49), wherein the comparing means (Threshold Detector X41) outputs an output signal on condition that the electric-signal level on the output line of the photoreceptor element has become lower than or equal to the threshold electric-signal level (see column 9, lines 47 – 60), and wherein the threshold electric-signal level becomes higher as time elapses (“The exposure threshold may be statically set by the first and second reference voltages, or dynamically set by changing the second reference voltage during the integration time interval”; see column 10, line 63 – column 11, line 5. “The exposure threshold may be set to a level corresponding to 100% saturation, or another level such as 80% or 90% of the saturation limit for the pixels ... An overexposure margin is realized by stopping the exposure when the exposure threshold of the observed pixels reaches a level below 100% of their saturation limit (e.g., 80% of saturation). The dynamic range of the system is not detrimentally affected by reducing the exposure threshold of the

system. For example, an exposure threshold corresponding to 80% of the saturation limit results in a loss of dynamic range of only 2 dB.” see column 11, lines 6 – 29).

Kindt et al. clearly disclose dynamically setting the threshold electric-signal level during an integration period, while additionally being capable of varying the threshold from 100% to 80%. Therefore, a combination of these teachings would certainly yield “wherein the threshold electric-signal level becomes higher as time elapse”, as claimed.

10. As for **Claim 3**, as indicated above, Kindt et al. disclose wherein the photoreceptor element is set to an initial-setting electric-signal level by an initialize signal and the electric-signal level on the output line is lowered in accordance with the intensity of light received, wherein the comparing means outputs an output signal on condition that the electric-signal level on the output line of the photoreceptor element has become lower than or equal to the threshold electric-signal level.

Also, as indicated above, Clark teaches an imaging apparatus with a photocell (100) and a comparing means (control circuit (CCKT)) such that an integration period, which begins with photocell reset and ends when the electric-signal level of the photocell crosses a threshold electric-signal level, is measure in units of time (see steps 414 – 428; figure 4 and as stated in column 5, line 22 – column 6, line 35). Furthermore, Clark teaches, as stated in column 6 (lines 21 – 27), “the time at which MONITOR is pulled high, and/or the integration time interval ... for the group of cells connected to MONITOR is stored by the imaging system. This interval is then used to computer the energy that was incident on the group of cells after obtaining the photocell output values at BL in step 430.”

However, Clark additionally discloses, a calculation unit (system controller 722; see figure 7), wherein the calculation unit (722) receives input of the time information recorded in the storage means, calculates a value of optical energy received by the photoreceptor element per unit time according to a formula $(V_{init}-V_{th}(t))/T_n$ where V_{init} denotes the initial-setting electric-signal level, $V_{th}(t)$ denotes the threshold electric-signal level, and T_n denotes the time information, and calculates a pixel value based on the value of optical energy received (see column 6, lines 21 – 27, and figure 5; “the integration time interval (here being $9-3=6$ time units) ... is stored by the imaging system ... this interval is then used to compute the energy that was incident on the group of cells after obtaining the photocell output values”).

11. As for **Claim 4**, Kindt et al. disclose, as shown in figure 4, wherein the comparing means (Threshold Detector X41) compares an amplified electric-signal level (output from source-follower amplifier 204; see figure 2) of the electric-signal level on the output line (“column readout line”) of the photoreceptor element (1100) with the threshold electric-signal level (V_{REF1} and V_{REF2}).

Cited Prior Art

12. The prior art made of record and not relied upon is considered pertinent to Applicant's disclosure for the following reasons:

- US 6,987,536 B2, US 5,872,596, US 7,088,395 B2, and US 6,580,454 B1 each disclose an imaging apparatus having a photocell and a comparing means for determining whether output electric-signal level crosses a threshold electric-signal level.

Conclusion

13. Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Justin P Misleh whose telephone number is 571.272.7313. The Examiner can normally be reached on Monday through Friday from 8:00 AM to 5:00 PM.

If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, Lin Ye can be reached on 571.272.7372. The fax phone number for the organization where this application or proceeding is assigned is 571.273.8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Justin Misleh
Examiner, GAU 2622
September 10, 2007